Optimization of Customer Satisfaction using Bayesian Networks

M Kempf

Department of Sustainable Production and Quality Management
Fraunhofer Institute for
Manufacturing Engineering and Automation
Nobelstrasse 12
70569 Stuttgart, Germany

Corresponding author's e-mail: Michael.Kempf@ipa.fraunhofer.de

Author Note: Michael Kempf is engaged in quality management as well as product development. His research focuses are statistical methods in the fields of reliability engineering, process optimization and risk minimization.

Abstract: Customer satisfaction is a measure of the degree to which a product or service meets the customer's expectations. Within this paper we will focus on measuring and optimizing customer satisfaction concerning administrative processes. Known techniques measuring the satisfaction degree are not capable to identify the criteria that have the most impact on the overall satisfaction. Furthermore, traditional statistical methods can't tell how changes in the overall satisfaction will affect the importance of the relevant criteria. To overcome these deficiencies we will introduce a novel probabilistic approach to optimize customer satisfaction, which is based on Bayesian Belief Networks – a sound probabilistic formalism for uncertain reasoning. These networks will be used to build up a model for the assessment, monitoring, simulation and optimization of customer satisfaction for administrative processes. The model will be built up hierarchically with the overall satisfaction modeled as root node, classes of criteria as nodes on the next level in the hierarchy and finally the satisfaction criteria themselves on the third level. After the definition of the qualitative model, the network has to be quantified. This will be done via prior knowledge on one hand and by learning from available data – namely the questionnaires – on the other hand.

Keywords: Customer Satisfaction, Probabilistic Reasoning, Bayesian Networks